

What is claimed is:

1           1.       An apparatus usable with a subterranean well, comprising:  
2           a magnetometer to indicate a strength of a magnetic field that at least partially  
3 extends through a portion of a downhole pipe; and  
4           a circuit coupled to the magnetometer to indicate a feature present in the pipe based  
5 on the indication from the magnetometer.

1  
1           2.       The apparatus of claim 1, wherein the features comprises at least one of the  
2 following:  
3           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

3  
2  
2           3.       The apparatus of claim 1, further comprising:  
a magnet to establish the magnetic field.

1  
1           4.       The apparatus of claim 1, wherein the apparatus does not include a magnet.

1  
2           5.       The apparatus of claim 1, further comprising:  
3 another magnetometer to indicate the strength of the magnetic field downhole,  
4 wherein the circuit indicates the magnetic feature using the indications from both  
magnetometers.

1  
1           6.       The apparatus of claim 1, further comprising:  
2 a telemetry interface to communicate a signal to a surface of the well to indicate the  
3 feature.

1  
1           7.       The apparatus of claim 1, wherein the magnetometer comprises a magnetic  
2 sensor to detect the strength of the magnetic field.

1           8.     The apparatus of claim 7, wherein the magnetic sensor comprises one of the  
2 following:

3           a Hall-effect sensor, a silicon-based sensor, a superconducting quantum interference  
4 device, a Serach coil, a magnetic flux gate and a magnetoinductive device.

1  
2           9.     An apparatus usable with a subterranean well, comprising:  
3           a magnet to establish a flux field near the apparatus, the magnet being formed from a  
4 material having magnetic properties similar to SmCo-30 and the flux field at least partially  
5 extending through a portion of a downhole pipe; and  
6           a winding to generate a signal produced by a change in a strength of the flux field to  
7 indicate detection of a feature of the pipe.

8  
9           10.    The apparatus of claim 9, wherein the features comprises at least one of the  
10 following:  
11           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
12 associated with the pipe.

13  
14           11.    The apparatus of claim 9, wherein the apparatus has a longitudinal dimension  
15 less than or equal to approximately two inches.

16  
17           12.    The apparatus of claim 9, further comprising:  
18           a bobbin around which the winding is wound, the bobbin formed from a material  
19 having ferromagnetic properties similar to ferromagnetic properties exhibited to Carpenter  
20 Electrical iron.

21  
22           13.    An apparatus usable with a subterranean well, comprising:  
23           a magnet to establish a flux field that at least partially extends through a portion of a  
24 downhole pipe; and  
25           a winding to generate a signal produced by a change in a strength of the flux field to  
26 indicate a feature of the pipe, the winding having at least approximately 1000 turns.

1           14.    The apparatus of claim 13, wherein the feature comprises at least one of the  
2 following:

3           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1           15.    The apparatus of claim 13, wherein the apparatus has a longitudinal dimension  
2 less than or equal to approximately two inches.

1           16.    The apparatus of claim 13, further comprising:  
2 a bobbin around which the winding is wound, the bobbin formed from a material  
3 having ferromagnetic properties similar to ferromagnetic properties exhibited to Carpenter  
4 iron.

1           17.    An apparatus usable with a subterranean well, comprising:  
2 a magnet to establish a flux field near the apparatus, flux field at least partially  
3 extending through a portion of a downhole pipe; and  
4 a winding to generate a signal produced by a change in a strength of the flux field to  
5 indicate a feature of the pipe,  
6 wherein the apparatus has a longitudinal dimension not exceeding approximately two  
7 inches.

1           18.    The apparatus of claim 17, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1           19.    The apparatus of claim 17, wherein the apparatus has a longitudinal dimension  
2 less than or equal to approximately two inches.

1           20.     An apparatus usable with a subterranean well, comprising:  
2           a magnet to establish a flux field that extends at least partially through a portion of a  
3 downhole pipe; and  
4           a winding to generate a signal produced by a change in a strength of the flux field to  
5 indicate detection of a feature of the pipe, the winding having at least approximately 40,000  
6 turns.

1           21.     The apparatus of claim 20, wherein the feature comprises at least one of the  
2 following:  
3           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1           22.     The apparatus of claim 20, wherein the apparatus has a longitudinal dimension  
2 less than or equal to approximately two inches.

1           23.     An apparatus usable in a subterranean well, comprising:  
2           a first winding to generate a first signal in response to a change in a magnetic field at  
3 least partially extending through the first winding and at least partially extending through a  
4 portion of a downhole pipe to indicate detection of a feature of the pipe;  
5           a second winding to generate a second signal in response to a change in the magnetic  
6 field to indicate detection of the feature, the magnetic field at least partially extending  
7 through the second winding;  
8           a first interface coupled to the first winding to communicate the first signal to the  
9 surface of the well when the apparatus is in a powered mode; and  
10          a second interface coupled to the second winding to communicate the second signal to  
11 the surface of the well when the apparatus in an unpowered mode.

1           24.     The apparatus of claim 23, further comprising:  
2           a bobbin, wherein the first and second windings are wound around the bobbin.

1 25. The apparatus of claim 23, wherein the powered interface comprises an  
2 amplifier.

1 26. The apparatus of claim 23, wherein the unpowered interface comprises a  
2 resistor network.

1 27. A method usable with a subterranean well, comprising:  
2 sensing a strength of a magnetic field that at least partially extends through a portion  
3 of a downhole pipe; and  
4 based on the sensed strength, generating a signal indicative of a feature of the pipe.

1 28. The method of claim 27, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1 29. The method of claim 27, further comprising:  
2 using a magnet to establish the magnetic field.

1 30. The method of claim 27, further comprising:  
2 not using a magnet to establish the magnetic field.

1 31. The method of claim 27, wherein the signal comprises a signal communicated  
2 to a surface of the well indicating the feature.

1 32. The apparatus of claim 27, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1           33.     A method usable with a subterranean well, comprising:  
2           using a magnet to establish a flux field that at least partially extends through a portion  
3 of a downhole pipe, the magnet being formed from a material having magnetic properties  
4 similar to SmCo-30; and  
5           sensing a change in a strength of the flux field to indicate detection of a feature of the  
6 pipe.

1           34.     The method of claim 33, wherein the feature comprises at least one of the  
2 following:  
3           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with a tubular member that at least partially surrounds the apparatus.

1           35.     A method usable with a subterranean well, comprising:  
2           establishing a magnetic flux field that at least partially extends through a portion of a  
3 downhole pipe; and  
4           using a winding to generate a signal produced by a change in a strength of the flux  
5 field, the winding having at least approximately 40,000 turns.

1           36.     The method of claim 35, wherein the feature comprises at least one of the  
2 following:  
3           a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

1 37. A method usable in a subterranean well, comprising:  
2 providing a first winding to generate a first signal in response to a change in a  
3 magnetic field at least partially extending through the first winding and at least partially  
4 extending through a portion of a downhole pipe to indicate detection of a feature of the pipe;  
5 providing a second winding to generate a second signal in response to a change in the  
6 magnetic field to indicate detection of the downhole feature, the magnetic field at least  
7 partially extending through the second winding;  
8 using a first interface coupled to the first winding to communicate the first signal to  
9 the surface of the well in a powered mode; and  
10 using a second interface coupled to the second winding to communicate the second  
11 signal to the surface of the well in an unpowered mode.

12 38. The method of claim 37, further comprising:  
13 winding the first and second windings around a bobbin shared in common.

14 39. The method of claim 37, wherein the first interface comprises an amplifier.

15 40. The method of claim 37, wherein the second interface comprises a resistor  
16 network.

17 41. A method usable with a subterranean well, comprising:  
18 sensing a strength of a magnetic field that at least partially extends through a portion  
19 of a downhole pipe; and  
20 based on the sensed strength, generating a signal indicative of sudden transverse  
21 movement.

22 42. The method of claim 41, wherein the feature comprises at least one of the  
23 following:  
24 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
25 associated with the pipe.

1 43. The method of claim 41, further comprising:  
2 using a magnet to establish the magnetic field.

1 44. The method of claim 41, further comprising:  
2 not using a magnet to establish the magnetic field.

1 45. The method of claim 41, wherein the signal comprises a signal communicated  
2 to a surface of the well indicating the feature.

1 46. The apparatus of claim 41, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

5 47. A method usable with a subterranean well, comprising:  
6 using a magnet to establish a flux field that at least partially extends through a portion  
7 of a downhole pipe, the magnet being formed from a material having magnetic properties  
8 similar to SmCo-30; and  
9 sensing a change in a strength of the flux field to indicate sudden transverse  
10 movement.

1 48. The method of claim 47, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with a tubular member that at least partially surrounds the apparatus.



1 49. A method usable with a subterranean well, comprising:  
2 establishing a magnetic flux field that at least partially extends through a portion of a  
3 downhole pipe; and  
4 using a winding to generate a signal produced by a change in a strength of the flux  
5 field to indicate sudden transverse movement, the winding having at least approximately  
6 40,000 turns.

1 50. The method of claim 49, wherein the feature comprises at least one of the  
2 following:  
3 a casing collar joint; and a geometry, anomaly, magnetic property or standoff distance  
4 associated with the pipe.

5 51. A method usable in a subterranean well, comprising:  
6 providing a first winding to generate a first signal in response to a change in a  
7 magnetic field at least partially extending through the first winding and at least partially  
8 extending through a portion of a downhole pipe to indicate sudden transverse movement;  
9 providing a second winding to generate a second signal in response to a change in the  
10 magnetic field to indicate detection of the downhole feature, the magnetic field at least  
11 partially extending through the second winding;  
12 using a first interface coupled to the first winding to communicate the first signal to  
13 the surface of the well in a powered mode; and  
14 using a second interface coupled to the second winding to communicate the second  
15 signal to the surface of the well in an unpowered mode.

1 52. The method of claim 51, further comprising:  
2 winding the first and second windings around a bobbin shared in common.

1 53. The method of claim 51, wherein the first interface comprises an amplifier.

1 54. The method of claim 51, wherein the second interface comprises a resistor  
2 network.